Australian Space Research Institute

Advancing space research through education

ASRI News

Number 26 Q1 2010

From the Editor

Welcome to the latest edition of ASRI News!

The concept of this electronic newsletter is to deliver, right to your desktop, news about ASRI's programs, grant applications, the achievements of our members or ASRI-supported researchers, and general space news from Australia and around the world. The newsletter will be distributed every quarter to ASRI members.

While we seek to make this newsletter informative, we do try and keep it as brief as possible to provide busy professionals and students with an "at a glance" update about ASRI and space in Australia. For each brief article, there's a web link pointing you to more detail if you want it, and there's always plenty more information on the ASRI website (www.asri.org.au).

We hope that you enjoy the new format and that it provides you an update of the activities of ASRI and other news related to space science, research, education and industry in Australia.

Through this communication, we hope to reach out to all our members and we welcome your say. I hope you find this edition informative and interesting.

Happy reading!

Message from the Board/Executive

Dear ASRI Member,

Welcome to the first edition of the 'revamped' electronic ASRI Newsletter. It's been a while since the last edition but, under the editorial leadership of Aidan Dargan, the new ASRI Communications Manager, we intend to prepare and electronically distribute the ASRI news in this new format every 3 months.

Right now we are in an exciting time that could lead to a significant improvement in Australia's space research, development and educational activity. The announcement of the first round recipients of the 'Australian Space Research Program' Grants is due by the end of February. ASRI is a consortium member of 3 educational grant applications:

1. ASCEND – Development of a new sounding rocket service utilizing large surplus Defence rocket motors,
2. AUSLaunch – Development of advanced SSRP capabilities and payloads, and
3. CDF Network for Space Missions – Development of a 'concurrent design facility' at RMIT to facilitate distributed space mission programs.

ASRINews is distributed free to ASRI members, to subscribers and other interested groups. ASRINews is an official publication of the Australian Space Research Institute, Ltd. The Institute is a distributed organisation with active groups in most states at universities, research organisations, private and public corporations. www.asri.org.au

Winning one or more of these grants would significantly improve ASRI's capability to deliver educational space technology services to our stakeholders, and further our interaction & links with the Australian space community.
In addition to the ASRP Grants, ASRI will be continuing its educational flagship programs – SSRP, Ausroc 2.5 & Nano, HAB, HyPER, and Satellite, through 2010. We will also be looking into the possibility of merging the ASRI conference in with the Australian Space Science Conference (ASSC). In all, a busy year ahead.
As ASRI members, this newsletter is for all of us. In this regard we welcome input – comments, articles, stories, program updates, and general space information from everyone. As CEO, I personally look forward to feedback from the membership as to the direction ASRI is taking, and suggestions for future activity

'Per Ardua ad Astra'

Mark Blair
ASRI CEO

News around ASRI

General

Vale Gary Luckman

It is with deep regret that we must inform ASRI members and supporters that the ASRI Chairman, Gary Luckman, passed away on the evening of Wednesday 30 September 2009. Gary was a founding member of ASRI and a keen supporter of all ASRI programs and projects. He will definitely be missed by all who knew him.

Gary Luckman *(Source: ASRI)*

Tribute Flight

On 4th October 2009, a Tribute Flight was launched for Gary Luckman. The launch vehicle consisted of a tube and nosecone only, with the nosecone engraved with a memorial to Gary. One minute's silence was observed during the flight.

Gary's Memorial Launch *(Source: ASRI)*

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Australian Space Research Program Grant Application

ASRI, in conjunction with other consortium members, has applied for 3 separate grants under the Australian Space Research Program (ASRP) as described below. The ASRP will provide $40 million over four years through competitive grants to support space research, innovation and skills development in areas of national significance. The grants include Education and Development Grants of between $200,000 and $1 million, to support student space projects and education activities; and Science and Innovation Project grants of between $1 million and $5 million to support eligible consortia for collaborative space research and development projects that link to strategic national priorities and niche capability. The first round of the program closed on 4 December 2009 with a total of 37 applications received. The first grants are expected to be announced in early 2010.

For more information bout the ASRP, visit:
http://www.innovation.gov.au/Industry/Space/Pages/AustralianSpaceResearchProgram.aspx

ASCEND Grant Application

As the Lead applicant, the University of Adelaide, along with its consortium members (DSTO, Uni of Queensland, RMIT and ASRI), has applied for educational grant funding under the ASRP Grant scheme. This grant, called the 'Advanced Sounding-rocket Capability for Education and National Development' (ASCEND) aims to provide Australian students and researchers with unique world class, low cost sounding rocket services for the testing and evaluation of experimental payloads and aerospace hardware in 'real' (near space) flight conditions.

The ASCEND Program will develop a new, high performance sounding rocket service, utilizing retired Defence assets.

AUSLaunch Grant Application

The University of Queensland, as the Lead applicant, along with its consortium members (Uni of Adelaide, RMIT and ASRI), has applied for educational grant funding for the 'Australian Undergraduate Student Launch' Program (AUSLaunch) grant application.

AUSLaunch aims to develop and improve the SSRP sub-systems to improve service reliability and effectiveness, and fund the development of more advanced scientific and engineering test payloads.

CDF Network for Space Missions Grant Application

RMIT, as the Lead applicant, along with its consortium members (ASRI, Delft Uni, Uni of Sydney, Mars Society of Australia, and Muroran Institute of Technology), has applied for grant funding to establish a 'Concurrent Design Facility' (CDF) to improve the efficiency and effectiveness of space mission planning and execution. Such a capability will greatly assist ASRI in running 'dispersed' space engineering projects in Australia.

Grant Applications 'Eligible'

DIISR has advised that all 3 of these Grant applications have been deemed 'eligible' and are through to the next phase of assessment. However, the Government has extended the assessment period to the end of Feb (1 month extension).

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ASRI-supported Uni projects win awards

The Uni of Adelaide Scramjet Team *(Source: Uni of Adelaide)*

The two University of Adelaide School of Mechanical Engineering projects won first prize in two categories at the recently-held Engineering Expo in Adelaide.

The SCRAMJet project, to design, manufacture and flight test of an external burning scramjet, won best project. The Sighter project, to develop the concept and analyse the performance of a 2-stage launch vehicle comprising of a Zuni and Sighter rocket in series configuration, won an industry award. The projects thanked ASRI for all their help.

More information at http://www.mecheng.adelaide.edu.au/news/newsletters/MechEng_2009ProjExhibBooklet.pdf

Conferences & Events

19th ASRI Annual Conference

The 19th ASRI Annual Conference was held at Engineer's House in Canberra on the 28th & 29th November 2009. The Conference outlined the current activities of ASRI, as well as the future direction of research the institute will be undertaking. The main focus of the Conference was the development of networking to support collaborative projects that further space technology through education. The Annual General Meeting was also held in parallel with the Conference.

In the interests of keeping this 1st edition of the new newsletter brief, the next edition will feature more detail about the Conference, including proceedings, presentations and outcomes of the AGM. Look for it in the next edition!

Upcoming - Australian Space Development Conference

The Australian Space Development Conference is due to be held in Adelaide from 5-7 July, organised by the National Space Society of Australia. The conference will bring together space focused organisations to share ideas, renew relationships and forge new links for the future. In 2010, the conference will be focusing on the progress of the Australian Space Research Program and looking at ways to support and build the ASRP in coming years.

The Conference will also co-host the National Space Engineering Symposium of Engineers Australia with parallel technical sessions - to encourage more complete networking across the Australian space Industry.

For more information, go to http://www.nssa.com.au/ASDC11/

Program News

ASRI is active in a number of programs, including the ***Small Sounding Rocket Program (SSRP)***, to provide Australian educational institutions with a payload launch service at very low cost; the ***High Altitude Balloon (HABx) Program***, to deliver unique experimental data related to the incursion by meteors etc into the upper atmosphere; the ***HyPER Program***, to develop a hybrid rocket

suitable for sounding rocket experiments to reach 30km+; the ***AUSROC Launch Vehicle Program***, to develop a microsatellite launch vehicle utilizing technology that can be scaled up for use in heavier launch vehicles and Solid Fuel Rocket Programs including the Wagtail; and the ***Satellite Program***, to develop an Australian domestic capability to develop, design, manufacture and operate space systems.
Here is some news from these programs…

Small Sounding Rocket Program (SSRP)

Sighter Launch

A Uni of Adelaide/ASRI Sighter Small Sounding Rocket launch occurred on 3/10/09. The purpose of launch was to fly the modified Sighter rocket to test its stability and recoverability, in order to demonstrate its use as 2nd stage of a multi-stage launch vehicle. The Sighter rocket consisted of a standard rocket tube with the fins and payload set up in a multistage configuration. The payload carried by the rocket consisted of an electronics module, recovery module and the nose cone, which contained a GPS system and transmitter. Two hatch doors were located on the recovery module, one of which contained the side "Pelican" parachute.

The rocket was launched is per ASRI's Standard Operating Procedures (SOP). At the apogee of the rocket's flight, the recovery system was initiated by the electronics module and the "Pelican" parachute was deployed, allowing decent of the rocket to the ground under stable conditions, with minimal damage to the payload and fins upon impact. Following the flight, the rocket was recovered.
A few minor problems arose with the GPS system which didn't transmit, however, the flight was a success. More information about this launch is available from http://www.asri.org.au/web/launchvehicle/sighter

Campaign Schedule

The first SSRP campaign of 2010 is tentatively scheduled for the weekend of 29-31 May. This earlier than usual date is due to the prospective return of the Japanese HYABUSA asteroid capsule, which is expected to be de-orbited into the Woomera Prohibited Area around early June. The 2010 May campaign will feature ongoing refinement of the SSRP Payload Recovery System, as well as two possible launches. The first possible launch is an intermediate hardware test of the University of Adelaide's Multi-Stage Launch Vehicle System (MSLVS) Project, which will be flown in a more evolved stage during the October campaign. The second possible payload is the Australian Hypersonics Initiate's Hypersonic Demonstrator (HSD). The flight of these payloads is subject to approval. The October 2010 SSRP campaign has yet to be scheduled, but is likely to occur over the weekend 2-4 October. This campaign will feature 4 launches, 3 of which are likely to be continuations of ongoing projects, such as the University of Queensland's axisymmetric RAMJET, University of Adelaide's externally-

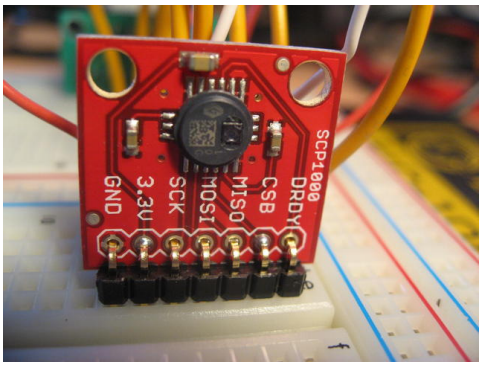
burning RAMJET and University of Adelaide's MSLVS. The potential 4th payload for October may be the Australian Youth Aerospace Forum's Glider project, which will involve the deployment of a free-flying glider from the ZUNI payload module.
The May 2010 campaign is closed to the public; members wishing to attend and/or to fill team positions must contact Richard Samuel [rsamuel@asri.org.au] before 30 April 2010.
Those wishing to attend the October campaign and/or to fill team positions must contact Richard before 31 August 2010.

Wanted: SSRP Trial Manager

Expressions of interest are now open for the position of May 2010 SSRP Trial Manager. The May Trials Manager position is an excellent professional development opportunity that is open to any ASRI member with reasonable familiarity of ASRI campaigns. Expressions of interest must be received by 31 March 2010. Contact Richard Samuel [rsamuel@asri.org.au] if you're interested.

HABx

Four High-altitude balloons were recently retrieved from storage and are being assessed to determine their condition. One of them is being gifted to CSIRO who will unfurl the balloon, assess its condition, and determine what experiments it will be used for. Geoff O'Callaghan, HABx program manager, has constructed temperature sensors and pressure sensors for the next launch of the High-altitude Balloons. The sensors consist of a DS18B20 temperature sensor and a SCP1000 pressure sensor, and Geoff

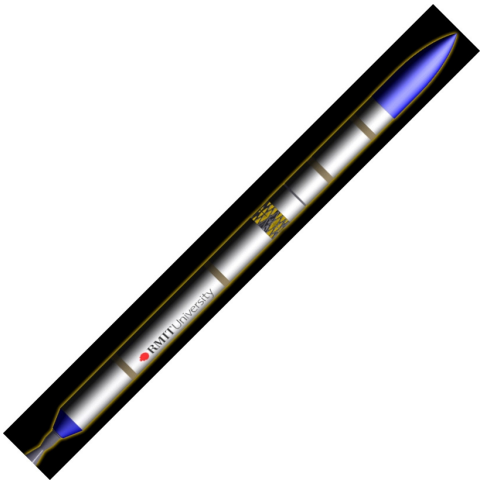


The SCP1000 pressure sensor *(Source: ASRI)*

managed to get both working and taking measurements, ready for the next HABx launch.
For more information on the HABx program, visit
http://www.asri.org.au/web/HAB/HABx

AUSROC Nano

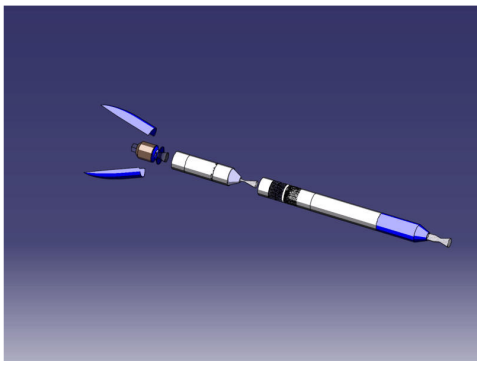
2009 marked the kickoff year for the Ausroc Nano Program.



AUSROC Nano Launch Vehicle *(Source: ASRI)*

The Program objective is to develop a 'minimum' launch vehicle capable of delivering a 10kg 'Nano' satellite to a 250km polar orbit utilising development work undertaken in the Ausroc 3 and 4 Programs.

Six students at RMIT were involved in 2009 and, with the assistance of ASRI members and RMIT staff, were able to complete a feasibility study on the vehicle. The student reports are available on-line at the ASRI Library.



The AUSROC Nano 'concept' configuration *(Source ASRI)*

Based on the outcomes and recommendations of the 2009 students, a second group of 6 students at RMIT along with several UQ students, will be conducting follow-on projects focusing more on specific technologies (electro-hydraulic gimbal control, composite structures, solid rocket motor design, tube wall rocket engine construction).

For more information, on the AUSROC Nano Program, please contact Mark Blair (mblair@asri.org.au).

Other Space News

Australian Space Industry Council Chair Appointed

Dr Ros Dubs is to be the chair of the newly-established Space Industry Innovation Council (SIIC), formed by the federal government to help boost the Australian Space industry. Dr Dubs was appointed by the Minister for Innovation, Industry, Science, and Research, Senator Kim Carr.

Dr Dubs was formerly Deputy Vice-Chancellor (External Relations) at the University of Technology Sydney and has a wealth of experience in academia, government and industry.

In her new role, she will chair a council that will advise the Australian Government on space industry matters, and which is made up of leaders with expertise in space science and industry. The council will also consider the implications to Australia's space industry of the recently-released Defence White Paper.

Directly relating this to ASRI, Brett Biddington, Secretary to the Board, has been appointed to the SIIC also. The Council held its first meeting in Canberra in December.

"2009 has been a landmark year for space activity in this country as the Government announced its intent. 2010 brings with the challenges of execution of at least the early deliverables", said Brett.

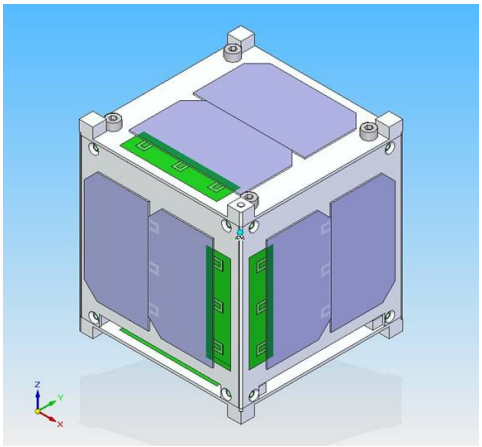
Also on the council will be Chris Jenkins, Managing Director, Thales Australia; Paul Sheridan, Director Satellites, Optus, and Dr Terry Stevenson, Chief Technology Officer, Raytheon Australia

To find out more about the SIIC, visit www.space.gov.au.

CUBESats

NASA will launch small research satellites for several universities as part of the agency's Educational Launch of Nanosatellite, or ELaNA, mission. The satellites, called CubeSats because of their shape, a class of small research spacecraft called picosatellites. They have a size of approximately 10 cm x 10cm x 10cm and weight no more than 1kg. The universities in the US that were selected to manufacture the current round of CUBESats are Montana State

University, the University of Colorado, the University of Florida and Kentucky Space, a consortium of state universities.
The satellites will be launched on top of NASA's Taurus rocket, hitching a ride alongside NASA's Glory spacecraft to continue precise measurements of the sun's energy output and observe the distribution of aerosol particles in the Earth's atmosphere, which represent one of the greatest areas of uncertainty in understanding Earth's climate system.



Cubesat Structure, aluminium housing with solar panels (*Source: NASA*)

For more information about the program, visit: http://www.nasa.gov/kennedy.
ASRI will examine this program as a potential future project.

ASICC Newsletter

The Australian Space Industry Chamber of Commerce (ASICC) is a national organisation formed to act on behalf of, and promote the growth of, the Australian space industry. ASICC consults with its members to devise policies to support the development of the Australian space industry and speaks with authority on issues connected with the development of the Australian space industry.

The ASICC recently released their own newsletter, providing information about the commercial and government landscape of the commercial space industry in Australia. To view the newsletter, visit: http://www.symbioscomms.com/ASICC/newsletter.html

President Obama to Propose Abandoning NASA's Moon Plan

By Todd Halvorson and Bart Jansen
FLORIDA TODAY, 28 January 2010
From Space.com

CAPE CANAVERAL — President Barack Obama will ask Congress to extend International Space Station operations through at least 2020, administration and NASA officials said Wednesday. The president's 2011 budget request, due to be delivered to Congress on Monday, will direct NASA to invest in the development of U.S. commercial space taxi services to ferry American astronauts to and from the station. The move is meant to reduce reliance on Russian crew transportation services after the retirement of America's aging shuttle fleet. The administration will provide for a safe fly-out of five remaining shuttle missions – even if the final flights slip into 2011. Obama's aim is to turn NASA once again into "an engine for innovation," one that will spur the development of commercial industry in low Earth orbit.
The Obama plan abandons NASA's current plans to return U.S. astronauts to the moon. NASA since 2004 has invested $9 billion in developing the Constellation program's Ares I and Ares V rockets and the Apollo-style Orion crew capsule for missions to the moon, Mars and, in the event no commercial means becomes available, the International Space Station.
The agency also planned to develop a rocket stage to propel astronauts from

low Earth to lunar orbit, and a lunar lander dubbed Altair. The idea was to return American astronauts to the moon by 2020. But the presidential panel convened by Obama to review NASA's plans determined that a human lunar return was unlikely before 2028.

The Ares V Rocket, part of the Constellation Program (Source: NASA)

Full story at www.space.com

Member/Sponsor Profile

Would you like to be our featured member in the next edition of the newsletter? If so, tell us about yourself, how long you've been a member of ASRI and your interests in space.
Send your replies to adargan@asri.org.au

Your Say

Feedback

Got any feedback about this newsletter? Got a news article you want to submit, or an idea for a project that ASRI could work on? Want to ask a question? We'd like to hear from you! Contact the editor at adargan@asri.org.au

Spread the Word!

Please feel free to pass this newsletter on to your friends, workmates and peers. Chances are you're working, studying or are interested in the Space/Aero/Technology field, and we want to get the word out about ASRI to as many people as possible!

The ASRI Board & Executive

ASRI Board

- Chairman – John Coleman
- Vice Chairman – Bernie Davison
- Secretary / Treasurer – Brett Biddington
- Director – Ross Dungavell
- Director – Mark Blair

ASRI Executive

- CEO – Mark Blair
- Treasurer – Brett Biddington (Executive Director Role)
- Legal Coordinator – Michael O'Donnell
- Membership Manager – Brian Hatfield
- Information Services Manager – Geoff O'Callaghan
- Communications Manager – Aidan Dargan
- Academic Manager – Stuart Kearney
- Safety Manager – Michael Nicholls
- SSRP Program Manager – Richard Samuel
- AUSROC 2.5 Project Manager – John August
- AUSROC Nano Program Manager – Mark Blair
- HAB Program Manager – Geoff O'Callaghan
- HyPER Program Manager – Michael Nicholls